

26

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<p>Substitute for form 1449A-PTO</p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p style="text-align: center; font-size: 0.8em;">(USE AS MANY SHEETS AS NECESSARY)</p> <div style="border: 1px solid black; display: flex; justify-content: space-between; width: 100%; margin-top: 10px;"> <span>Sheet</span> <span>1</span> <span>Of</span> <span>8</span> </div>	<p style="text-align: center; font-weight: bold;">COMPLETE IF KNOWN</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Application Number</td> <td>10/078,474</td> </tr> <tr> <td>Filing Date</td> <td>2-21-02</td> </tr> <tr> <td>First Named Inventor</td> <td>Ho Ki Kwon</td> </tr> <tr> <td>Art Unit</td> <td>2828</td> </tr> <tr> <td>Examiner Name</td> <td>Dung T. Nguyen</td> </tr> <tr> <td>Attorney Docket Number</td> <td>H0002769</td> </tr> </table>	Application Number	10/078,474	Filing Date	2-21-02	First Named Inventor	Ho Ki Kwon	Art Unit	2828	Examiner Name	Dung T. Nguyen	Attorney Docket Number	H0002769
Application Number	10/078,474												
Filing Date	2-21-02												
First Named Inventor	Ho Ki Kwon												
Art Unit	2828												
Examiner Name	Dung T. Nguyen												
Attorney Docket Number	H0002769												

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
<i>DN</i>		US 4445218		04-24-1984	Coldren	
		US 4608697		08-26-1986	Coldren	
		US 4622672		11-11-1986	Coldren et al.	
		US 4829347		05-09-1989	Cheng et al.	
		US 4873696		10-10-1989	Coldren et al.	
		US 4896325		01-23-1990	Coldren	
		US 5045499		09-03-1991	Nishizawa et al.	
		US 5082799	A	01-21-1992	Holmstrom et al.	
		US 5245622	A	09-14-1993	Jewell et al.	
		US 5251225	A	10-05-1993	Eglash et al.	
		US 5293392	A	03-08-1994	Shieh et al.	
		US 5343487	A	08-30-1994	Scott et al.	
		US 5358880	A	10-25-1994	Lebby et al.	
		US 5365540	A	11-15-1994	Yamanaka	
		US 5392307	A	02-21-1995	Sugiyama et al.	
		US 5416044	A	05-16-1995	Chino et al.	
		US 5422901	A	06-06-1995	Lebby et al.	
		US 5468343	A	11-21-1995	Kitano	
		US 5491710	A	02-13-1996	Lo	
		US 5513204	A	04-30-1996	Jayaraman	
		US 5568504	A	10-22-1996	Kock et al.	
		US 5588995	A	12-31-1996	Sheldon	
		US 5631472	A	05-20-1997	Cunningham et al.	
		US 5693180	A	12-02-1997	Furukawa et al.	
		US 5719891	A	02-17-1998	Jewell	
		US 5719894	A	02-17-1998	Jewell et al.	

Examiner Signature	<i>[Signature]</i>	Date Considered	05/17/04
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pw		US 5719895	A	02-17-1998	Jewell et al.
		US 5729567	A	03-17-1998	Nakagawa
		US 5732103	A	03-24-1998	Ramdani et al.
		US 5747366	A	05-05-1998	Brillouet et al.
		US 5754578	A	05-19-1998	Jayaraman
		US 5757833	A	05-26-1998	Arakawa et al.
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		US 5991326	A	11-23-1999	Yuen et al.
		US 6021147	A	02-01-2000	Jiang et al.
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		US 6049556	A	04-11-2000	Sato
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		US 6057560	A	05-02-2000	Uchida
		US 6061380	A	05-09-2000	Jiang et al.

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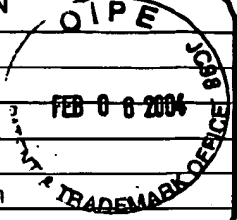
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Sheet	3	Of	8
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**COMPLETE IF KNOWN**

Applicati n Number	10/078,474
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
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dw	US 6061381	A	05-09-2000	Adams et al.	
	US 6121068	A	09-19-2000	Ramdani et al.	
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	US 6434180	B1	08-13-2002	Cunningham	
	US 6542530	B1	04-01-2003	Shieh et al.	
	US 6546031	B1	04-08-2003	Jewell et al.	
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	US 6580741	B2	06-17-2003	Jiang et al.	
	US 6603784	B1	08-05-2003	Johnson	
	US 6621842	B1	09-16-2003	Dapkus	
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	US 2003/ 0118067	A1	06-26-2003	Johnson	

23

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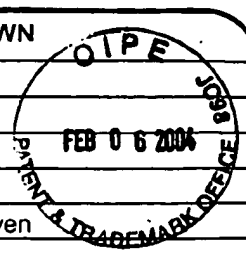
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**FOREIGN PATENT DOCUMENTS**

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		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
DN		EP	0 740 377	A1	10-30-1996	Hewlett-Packard Company		
		EP	0 740 377	B	10-30-1996	Hewlett-Packard Company		
		EP	0 765 014	A1	03-26-1997	France Telecom		
		EP	0 765 014	B1	07-28-1999	France Telecom		
		EP	0 822 630	A1	02-04-1998	Hewlett-Packard Company		
		EP	0 874 428	A2	10-28-1998	Motorola, Inc.		
		EP	0 874 428	A3	11-04-1998	Motorola, Inc.		
		EP	0 874 428	B1	15-04-1998	Motorola, Inc.		
		EP	0 975 073	A1	01-26-2000	NEC Corporation		
		EP	0 999 621	B1	11-04-1999	Jayaraman et al.		
		EP	1 294 063	A1	03-19-2003	Avalon Photonics AG		
		JP	57026492	A	02-12-1982	NEC Corp.		
		WO	98/007218	A1	02-19-1998	W.L. Gore & Associates, Inc.		
		WO	00/033433	A2	06-08-2000	Arizona Board of Regents		
		WO	00/033433	A3	06-08-2000	Arizona Board of Regents		
		WO	00/038287	A1	06-29-2000	Honeywell, Inc.		
		WO	00/052789	A2	02-29-2000	The Regents of the University of California		
		WO	00/052789	A3	02-29-2000	The Regents of the University of California		
		WO	00/065700	A2	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	00/065700	A3	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	01/016642	A2	03-08-2001	Agility Communications		
		WO	01/016642	A3	03-08-2001	Agility Communications		
		WO	01/017076	A2	03-08-2001	The Regents of the University of California		

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*[Handwritten Signature]*

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✓	WO	01/017076	A3	03-08-2001	The Regents of the University of California		
✓	WO	01/018919	A1	03-15-2001	The Regents of the University of California		
✓	WO	01/024328	A2	04-05-2001	Agility Communications		
✓	WO	01/024328	A3	04-05-2001	Agility Communications		
✓	WO	01/033677	A2	05-10-2001	Arizona Board of Regents		
✓	WO	01/033677	A3	05-10-2001	Arizona Board of Regents		
✓	WO	01/052373	A2	07-19-2001	Infineon Technologies Ag		
✓	WO	01/052373	A3	07-19-2001	Infineon Technologies Ag		
✓	WO	01/084682	A2	11-08-2001	Agility Communications, Inc.		
✓	WO	01/093387	A2	12-06-2001	Sandia Corporation		
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✓	WO	01/095444	A2	12-13-2001	Agility Communications, Inc.		
✓	WO	01/098756	A2	12-27-2001	The Regents of the University of California		
✓	WO	02/003515	A2	01-10-2002	Agility Communications, Inc.		
✓	WO	02/017445	A1	02-28-2002	The Regents of the University of California		
✓	WO	02/084829	A1	10-24-2002	Cielo Communications, Inc.		
✓	WO	03/052797	A1	06-26-2003	Jiang et al.		

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
pw	✓	International Search Report, dated 08-09-2003, relative to PCT application No. PCT/US 03/05368, the foreign equivalent to the instant U.S. application 10/078,474	
	✓	AKIYAMA, Y., et al., "Growth of High Quality GaAs Layers on Si Substrates by MOCVD". 1986, Journal of Crystal Growth, pp. 490-497.	
	✓	ALMUNEAU, G., et al., "Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy", article, May 6, 1999, pgs 113-6, Vol. 208, Journal of Crystal Growth.	
	✓	ALMUNEAU, G., et al., "Improved electrical and thermal properties of InP-AlGaAsSb Bragg mirrors for long-wavelength vertical-cavity lasers", article, Oct 2000, pgs 1322-4, Vol. 12, No. 10, IEEE Photonics Technology Letters.	
	✓	ALMUNEAU, G., et al., "Molecular beam epitaxial growth of monolithic 1.55 μm vertical cavity surface emitting lasers with AlGaAsSb/AlAsSb Bragg mirrors", article, May/Jun 2000, pgs 1601-4, Vol. 8, No. 3, Journal of Vacuum Science Technology.	
	✓	ANAN, T., et al., "Continuous-wave operation of 1.30 μm GaAsSb/GaAs VCSELs", article, Apr 26, 2001, pgs 566-7, Vol. 37, No. 9, Electronics Letters.	

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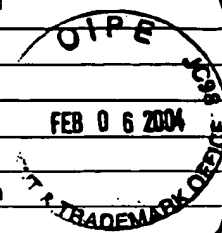
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First Named Inventor	Ho Ki Kwon
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Attorney Docket Number	H0002769



✓	BLACK, K., et al., "Double-fused 1.5 $\mu$ m vertical cavity lasers with record high $T_0$ of 132K at room temperature", article, Oct 1, 1998, pgs 1947-9, Vol. 34, No. 20, Electronics Letters.	
✓	BLUM, O., et al., "Electrical and optical characteristics of AlAsSb/BaAsSb distributed Bragg reflectors for surface emitting lasers", article, Nov 27, 1995, pgs 3233-5, Vol. 67, No. 22, Applied Physics Letters.	
✓	BLUM, O., et al., "Highly reflective, long wavelength AlAsSb/GaAsSb distributed Bragg reflector grown by molecular beam epitaxy on InP substrates", article, Jan 16, 1995, pgs 329-31, Vol. 66, No. 3, Applied Physics Letters.	
✓	BOUCART, J., et al., "1mW CW-RT monolithic VCSEL at 1.55 $\mu$ m", article, Jun 1999, pgs 629-31, Vol. 11, No. 6., IEEE Photonic Technology Letters.	
✓	BOUCART, J., et al., "Metamorphic DBR and Tunnel-Junction Injection: A CW RT Monolithic Long-Wavelength VCSEL", May/June 1999, pp. 520-529, IEEE Journal of Selected Topics in Quantum Electronics, Vol. 5, No. 3	
✓	BOUCART, J., et al., "Optimization of the Metamorphic Growth of GaAs for long wavelength VCSELs", 1999, pp. 1015-1019, Journal of Crystal Growth 201/202.	
✓	CAMPBELL, J., et al., "Quantum dot resonant cavity photodiode with operation near 1.3 $\mu$ m wavelength", article, Jul 17, 1997, pgs 1337-9, Vol. 33, No. 15, Electronics Letters.	
✓	CHANG, C., et al., "Parasitics and design considerations on oxide-implant VCSELs", article, Dec 2001, pgs 1274-6, Vol. 13, No. 12, IEEE Photonics Technology Letters.	
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✓	DEMEESTER, A., et al., "GaAs on InP: a promising material combination", article, March, 1989, pp. 44-48, Chemtronics Vol. 4.	
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✓	GOLDSTEIN, L., et al., "GaAlAs/GaAs metamorphic Bragg mirror for long wavelength VCSELs", article, February 5, 1998, Vol. 34, No. 3, Electronics Letters.	
✓	GOURLEY, F., et al., "Epitaxial semiconductor optical interference devices", invited paper, 1987, pgs 178-189, Vol. 792, SPIE.	
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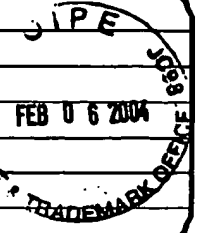
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Sheet 72 Of 8

## COMPLETE IF KNOWN

Application Number 10/078,474  
Filing Date 2-21-02  
First Named Inventor Ho Ki Kwon  
Group Art Unit 2828  
Examiner Name Dung T. Nguyen  
Attorney Docket Number H0002769



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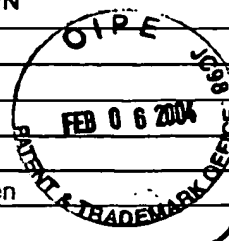
**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 8 Of 8

**COMPLETE IF KNOWN**

Application Number	10/078,474
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002769



✓	PETERS, M., et al., "Realization and modeling of a pseudomorphic (GaAs <sub>1-x</sub> Sb <sub>x</sub> In <sub>y</sub> Ga <sub>1-y</sub> As)/GaAs bilayer-quantum well", article, Oct 30, 1995, pgs 2639-41, Applied Physics Letter 67 (18).
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